CLAIMS

What is claimed is:

1. A system for performing query operations, the system comprising:

a base table having a plurality of spatial objects;

an index table that comprises a plurality of data entries, the plurality of data entries being associated with the plurality of spatial objects;

a module adapted to perform a query operation on the index table, the module configured to;

convert a query window into a plurality of values;

create a scan range for each of the plurality of values with a begin range value and an end range value from the plurality of values, wherein the scan range includes a stop condition;

scan the plurality of data entries for each of the scan ranges to identify one of the end range value and the stop condition; and

return a result based upon the plurality of data entries that are within the scan range for each of the plurality of values.

2. The system set forth in claim 1, wherein the stop condition is satisfied if one of the plurality of data entries not Z-value equivalent to one of the plurality of values being utilized to scan the plurality of data entries.

3. The system set forth in claim 1, wherein the index table is a Polygon Map Region QuadTree index.

4. The system set forth in claim 1, wherein the plurality of data entries each comprises a Z-value field and an object identification field.

5. The system set forth in claim 4, wherein the result comprises a plurality of object identification fields that correspond to a plurality of data entries.

6. A system for performing query operations, the system comprising:

a base table having a plurality of spatial objects;

an index table that comprises a plurality of data entries, the plurality of data entries being associated with the plurality of spatial objects in the base table;

a module adapted to perform a query operation on the index table, the module configured to;

convert a query window into a plurality of values;

perform a first scan for one of the plurality of values on the plurality of data entries;

return a result from the first scan of the plurality of data entries;

determine whether a second of the plurality of values may return the result with a second scan;

skip the second scan if the second scan is determined to return the result; and

perform the second scan if the second scan is determined not to return the result.

7. The system set forth in claim 6, wherein the plurality of values comprises a plurality of Z-values and the plurality of data entries comprise a plurality of fields, wherein one of the plurality of fields is a Z-value field.

8. The system set forth in claim 6, wherein the results comprise an empty identifier or a table having a plurality of Z-values and a plurality of object identifications.

9. The system set forth in claim 6, comprising creating a scan range for each of the plurality of values with a begin range value and an end range value from the plurality of values, wherein the scan range includes a stop condition;

10. The system set forth in claim 9, wherein the begin range value is higher than the end range value; and the module is configured to perform the first scan on the plurality of data entries in descending order.

11. A system for performing a query operation, comprising:

means for transforming a query window into a plurality of values;

means for creating a scan range with a begin range value, an end range value, and a stop condition for each of the plurality of values; and

means for scanning a plurality of data entries until one of the end range value and the stop condition.

12. A method of performing a query operation, the method comprising:

converting a query window into a plurality of values;

defining a begin range, an end range, and a stop condition for each of the plurality of values;

scanning a plurality of data entries until one of the end range and the stop condition; and

returning a result based upon the plurality of data entries that are between the begin value and one of the end range and the stop condition for each of the plurality of values.

13. The method set forth in claim 12, comprising deriving an index table of the plurality of data entries from a base table of a plurality of spatial objects.

14. The method set forth in claim 12, wherein the plurality of data entries is a Polygon Map Region QuadTree index.

15. The method set forth in claim 12, wherein scanning comprises comparing each of the plurality of data entries to at least one of the plurality of values to determine if each of the plurality of data entries is Z-value equivalent to the at least one of the plurality of values.

16. The method set forth in claim 12, wherein the method is performed in the recited order.

17 A method for performing query operations, the method comprising:

converting a query window into a plurality of values;

performing a first scan for one of the plurality of values on a plurality of data entries of an index table;

returning a result from the first scan of the plurality of data entries in the index table;

determining whether a second of the plurality of values may return the result with a second scan;

skipping the second scan if the second of the plurality of values is determined to return the result; and

performing the second scan if the second plurality of values is determined not to return the result.

18. The method set forth in claim 17, wherein the result may be one of an empty identifier or a table that comprises a Z-value field and an object identification field.

19. The method set forth in claim 17, comprising combining each of the results into a result table to be provided to a user in response to the query operation.

20. The method set forth in claim 17, wherein the method is performed in the recited order.

21. A computer program, comprising:

a machine readable medium;

an index table stored on the machine readable medium, the index table containing a plurality of data entries; and

a query module stored on the machine readable medium, the query module configured to;

convert a query window into a plurality of values;

create a scan range for each of the plurality of values with a begin range value, an end range value, and a stop condition; and

scan the plurality of data entries until one of the end range value and the stop condition.

22. The computer program set forth in claim 21, wherein the query module is further configured to return a plurality of results based upon the plurality of data entries that are within the scan range for each of the plurality of values.

23. The computer program set forth in claim 21, wherein the plurality of data entries each comprises a Z-value field and an object identification field.